Part

B

Section 14: Background Information on HCP for Marbled Murrelet

M E M O R A N D U M

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SUBJECT: Pacific Lumber HCP/SYP
: Background Information on HCP for Marbled Murrelet

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Under the direction of Jim Gaither at the California Resources Agency, I have been working with technical staff of the state and federal wildlife agencies to synthesize the work on marbled murrelet for Palco's HCP. I am transmitting a summary for discussion. There is more material which I will make available at the meeting in Sacramento on June 8. For now, **I** want to be able to put some key material in your hands for advanced review.

Introduction

Pacific Lumber (Palco or PL) seeks an incidental take permit for the marbled murrelet and other species based on a proposed HCP. The Headwaters purchase is a corollary of the HCP.

The federally listed range of the marbled murrelet extends from Washington State into central California. The Marbled Murrelet Recovery Plan (1997) delineates six Marbled Murrelet Conservation Zones (MMCZ) based on population distribution. The PL ownership is in the "Southern Humboldt Bioregion" portion of MMCZ4. (See **Figure #1, Marbled Murrelet Conservation Zones and Southern Humboldt Bioregion.)** A portion of the range of the Marbled murrelet has been designated as critical habitat. A 36,973 acre portion of PL's ownership, including Headwaters, is in designated critical habitat. **(See Figure #2, Marbled Murrelet Critical Habitat.)** Humboldt Redwood State Park to the south and State and County park are also in critical habitat.

The HCP planning area is a total of 219,298 acres, which includes 209,830 acres of PL land and 9,468 acres of SPI Elk River Timber Company land subject to the Headwaters purchase and land exchange. With the Headwater purchase, 7,478 acres of the planning area would be under public ownership and 211,820 acres would be in PL ownership.

The HCP proposes establishment of a series of Murrelet Conservation Areas (MCAs) for the life of the permit, and take minimization restrictions on operations elsewhere on PL land. Buffer areas are provided for PL land adjacent to OGR on public land. Areas within 300 feet of OGR is not to be cut. Areas within 1/4 mile are

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subject to seasonal harvest restriction. **Figure #3A, Study Area** and **Figure #3B, Study Area, Enlargement** show the proposed MCAs and their names and the 1/4 mile and 300-foot buffer areas. The June 1998 Draft HCP provides for protection of all MCAs for the 50-year life of the permits, with an option to harvest either the Owl Creek or the Grizzley Creek MCA.

With the Headwaters purchase and the delineation of the MCA's, most (4,322 acres, 84%) of the uncut (unentered, or virgin) old growth redwood (OGR) is set aside from harvest. A substantial amount (3,597 acres, 29%) of lower density residual old growth will be available for harvest. The MCAs, buffers and Headwaters contain some 17,000 acres in total, including second growth.

The general strategy for the MCAs is to focus conservation on the larger uncut stands or relatively contiguous uncut-residual old growth stands. Stands are buffered and incorporate second growth to improve geometry and increase connectivity - both for biological and management reasons. The MCAs protect most (74%) of the uncut and residual in critical habitat and add the Grizzley Creek complex outside of critical habitat to build on the existing old growth in the state and county park and extend protection along the Van Duzen River corridor.

Habitat

Most of the uncut and some of the residual OGR is occupied or potentially occupied by marbled murrelet and hence harvest would amount to a take of murrelet. The usual means to estimate take in an HCP is by estimating the area of habitat lost. The HCP would allow PL to plan for harvest of roughly half of the residual OGR on its property. Because the lower density residual is generally believed to be lower quality habitat, it should have a lower probability of occupancy and its harvest should result in a disproportionately lower estimate of take

SPI land involved in the Headwaters purchase does not contain appreciable amounts of OGR timber and no OGR is mapped there. Other OGR timber is found on the ownership outside of the area specifically designated as an OGB forest type, but these trees are scattered so rarely that they do not constitute potential habitat for the marbled murrelet and are not mapped as OGR forest type. **Table #1, Summary of Old Growth Redwood and HCP Status,** shows a summary of OGR forest cover broken down by status under the proposed HCP. Several timber classes are aggregated to show three classes of uncut OGR and two classes of residual OGR. **Figure #4A, Uncut and Residual Old Growth Redwood and Figure #4B, Uncut and Residual Old Growth Redwood, Enlargement** shows the distribution of OGR forest cover.

The majority (96%) of the residual is the low density (under 15 trees per acre). Further classification by timber volume shown in **Figure #5, Old Growth Redwood Timber Volume by Type,** where the various mapping polygons are ordered by the density of redwood timber volume estimated to be present. Timber volume does not directly correspond to habitat, but is a further distinction in OGR density. **Table #1B,**

Distribution of Old Growth Redwood by Timber Volume by HCP Status shows the approximate classification of HCP action by timber volume. It shows that the only 4.1% of the OGR residual set aside under HCP MCAs have OGR timber density less than 25 thousand board feet per acre (MMBF/ac) whereas 37.7% of the residual available for harvest is in the lower density class. This implies a qualitative distinction.

Assessment of canopy shows that two-thirds of the low density residual is less than 25% canopy, with no significant difference between MCAs and the area available for harvest.

Table #1C, Old Growth Forest Types and HCP Status In- and Outside of Critical Habitat summarizes the distribution of OGR and other forest types in and outside of the designated critical habitat. It shows that the HCP overall would make 9,708 acres of all OGR available for harvest (with the option to cut Owl Creek)

Marbled Murrelet Survey Data

The PL ownership has been surveyed for murrelet occupancy for 1992 through 1997. Survey data is collected from March through August, hence results for 1998 will not be available until fall. The survey on PL land has been conducted primarily for the purpose of determining whether a specific stand of old growth could be cleared for harvest. The survey was not conducted uniformly or with a design intended to determine the distribution or density of murrelet on the entire property. Survey in nearby Humboldt Redwood State Park (HRSP) has been more uniform in design, but less intense and covers only 1997. **Figure #6A, Marbled Murrelet Survey Status** and **Figure #6B, Marbled Murrelet Survey Status, Enlargement** show murrelet survey stations and survey status.

The survey stations are reported as “occupied”, ‘present”, or “not detected”. “Present” indicates that birds were observed, but that reproductive behavior was not observed. See discussion by others.

A OGR stand is deemed “occupied” if any survey station in the stand is observed “occupied” one or more times. The occupied station may lie as far as 200 meters (640 feet) from the edge of the OGR due to the need to place stations in areas suitable for observation. The stand is defined as any contiguous OGR, either uncut or residual, with no more than a 100 m gap of unsuitable habitat in the forest cover. Low density residual or OGR trees lacking proper nest site characteristics may be considered unsuitable. Thus, a forest type map alone cannot specifically show contiguity - that can only be determined in the field.

For the purpose of clearing a stand for harvest, an OGR stand is deemed ‘not occupied” if it is not contiguous with an occupied station and if there are sufficient negative survey results. A negative survey means either four or more survey days with no murrelet detections or ten or more survey days with only presence detection. There should be a survey station for every 30 acres of suitable OGR forest in the stand. The

determination of habitat suitability and the need for survey reflects qualitative judgement in the field.

The habitat take estimate is based on an estimate of the probable area of PL ownership that is not occupied and hence where harvest would not be a take -- it is not intended to specifically clear any stand for harvest.

Survey stations are subject to non-uniform effort. As illustrated in **Table #2, Murrelet Survey Counts at Stations, by Result,** most of the "presence" and "not detected" stations are not surveyed to a sufficient intensity to conclude that the stand is not occupied. The protocol allows fewer surveys where several stations are close (overlapping 200m circles). The analysis in Table #2 does not reflect the spatial clustering of stations so some with low survey intensity could have been determined to be non-occupied. Inspection of the map shows that few such clusters still have OGR present.

Impact

The projected take of habitat from the HCP depends on assumptions of the extent of occupancy of thousands of acres of low density old growth residuals in the low/no survey areas.

Summarizing a series of analyses (which will be made available on June 8), we estimate that the loss of OGR allowed under the HCP would amount to from 17% to 23% of the occupied habitat in the Southern Humboldt Bioregion. Work done by C.J. Ralph's team at Redwood Sciences Lab indicate that there is distinctly higher value in the Headwaters and MCAs than in other areas which would be harvested under the HCP. It may be that there is more concentrated Marbled murrelet use in the MCAs an there may be more Marbled murrelet use in the Humboldt Redwood State Park than is assumed, and these conditions would reduce the estimate of habitat take.

The habitat loss on PL land is placed in context by **Table #5G, All Old Growth Redwood Area, and Lower and Higher Occupancy Weighted Estimates of Take, in Context.** Table #5G compares area available for harvest with habitat estimates for MMCZ4 and the three state region. Three perspectives are given, the first column shows the gross OGR area, with no estimate of actual area occupied and no relative weighting of uncut and residual. The **next** two columns give the lower and the higher occupancy weighted estimates. Because the occupancy weighted estimates change the area values for PL and the State Park, the denominator for Southern Humboldt and for MMCZ4 is adjusted. In context, the lower and higher estimates of habitat loss translate to a 2.6% to 3.6% loss of habitat in MMCZ4 and 0.5% to 0.7% loss of habitat in the three-state range. The weakness of this comparison is the need to assume that OGR habitat on PL land (and in Southern Humboldt) is comparable on an acre-for-acre basis with other, typically non-redwood habitat elsewhere.

Loss of terrestrial nesting habitat will have population impacts, but the nature of

the effect is not easily predicted. Different conjecture leads to predictions of minimal effect or catastrophic effect. The simplest assumption is that there is a one-to-one relationship between habitat loss and the corresponding steady-state population at-sea. Estimating the equivalent number of adult birds corresponding to terrestrial habitat loss is not directly meaningful because it does not mean that this number of birds will be "taken" as individuals.

The equivalent number of adult birds does allow an alternative way to compare impact on Southern Humboldt with the remainder of the range. **Table #5H, Population-based Estimates of Take, in Context** takes the lower and higher percentage estimates for habitat loss and applies them to the assumed 1,479 population estimate for the Southern Humboldt Bioregion, at-sea. The resulting population estimate "subject to harvest" can be compared against population estimates for MMCZ4 and the three-state range. This form of comparison allows a somewhat speculative population impact on PL to be compared directly with population estimates elsewhere and side-steps the comparability of habitat across the range.

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Pacific Lumber HCP

1.A Summary of Old Growth Redwood and HCP Status

Area in acres

	Other	OG Doug Fir	REDOG W1	REDOG w2	REDOG w3	All Uncut OGR	REDRSD 2	REDRSD '3,	All Residual	All OGR	Total Area
PL Lands											
Avail for Harvest	176,225	8,304	203	217	81	**501**	264	8,057	8,321	8,823	193,352
Buffer Zones											
buf1320	1,632					**0**		205	205	205	1,837
buf300	331					**0**		90	90	90	421
MCA Options											
Grizzley	410		73	44		**117**	48	482	530	647	1,057
Owl Crk	350	19	240	77		317	10	230	239	556	925
MCA Reserve											
Allen Crk	740		267	68	59	393	20	575	595	**988**	1,729
B Rd 7&9	232				21	21	14	224	239	260	492
Bell Lawrence	187		315	24		339		107	107	446	634
Booths Run	403	166				0	1	215	216	216	784
Cooper Mill	307					0	151	245	397	397	704
Elkhead Residual	286					0		65	65	65	351
LNF Elk	214					0	36	201	237	237	451
Rd 3	189					0	19	355	374	374	564
Rt Rd 9	128		71		6	77		112	112	190	318
Shaw Gift	162	31	250	6		255		54	54	310	503
MCA reserve Subtotal	2,849	197	902	98	86	1,087	242	2,155	2,397	3,483	6,529
All HCP (Keep Grizzley)	5,222	**197**	976	142	86	1,204	290	**2,931**	3,221	4,425	**9,844**
All HCP (Keep Owl)	5,162	**216**	1,142	175	86	1,404	252	**2,679**	2,931	4,334	9,712
Headwaters	1,927		2,288	584	245	3,117	0	664	665	3,782	**5,709**
PLTOTAL	183,724	8,519	3,706	1,021	413	5,139	565	11,882	12,447	17,586	**209,830**

	Other	OG Fir	Doug	REDOG W1	REDOG w2	REDOG w3	All Uncut OGR	REDRSD 2	REDRSD 3	All Residual	All OGR	Total Area
SPI Lands												
Avail for Harvest	**7,674**						**0**			**0**	**0**	**7,674**
Buffer Zones												
buf300	**26**						**0**			**0**	**0**	**26**
Headwaters	1,769						**0**			**0**	**0**	**1,769**
SPI Conserved	1,795		0	0	0	0	**0**	**0**	**0**	**0**	**0**	1,795
SPI TOTAL	9,469						0				0	9,469
ALL HCP and Purchase Conservation												
Keep Griuley	**8,944**	**197**		**3,264**	**726**	**332**	**4,321**	**291**	**3,595**	**3,886**	**8,207**	**17,349**
Keep Owl	**8,884**	**216**		**3,430**	**759**	**332**	**4,521**	**252**	**3,343**	**3,596**	**8,116**	**17,216**

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Notes for Summary of Old Growth Redwood and HCP Status

Avail for Harvest	available for harvest planning, not taking into account watercourse protection
Buffer Zones	Restricted harvest to protect adjacent old growth habitat.
buf1320	within 1/4 mile of HRSP
buf300	within 300 feet of old growth off-site
MCA	Murrelet Conservation Area per boundaries 6.1.
MCA Options	Either Owl Crk MCA or Grizzley Creek MCA would be available for harvest if the other is conserved.
Headwaters	Proposed Headwaters purchase area.
SPI TOTAL	SPI lands involved in Headwaters purchase/land exchange.
ALL HCP and Purchase Conservation	Area subject to some form of protection under the Headwaters purchase and PL HCP.

Old Growth Redwood (OGR)

REDOGW1 Uncut, Canopy over 75% cover
REDOGW2 Uncut, Canopy 50% to 75%
REDOQW3 Uncut, Canopy under 50%

REDRSD2 Residual 15 to 30 trees per acre
REDRSD3 Residual under 15 trees per acre
No area is mapped with over 30 residual trees per acre

Pacific Lumber HCP

1. B Distribution of Old Growth Redwood by Timber Volume Density (Mbf/ac) by HCP Status

Area (acres) In OGR Timber Density Class

Mbf/ac:	<25	25 to 50	50 to 100	100 to 150	150 to 200	>200	Total
Uncut OGR							
Available	0	54	81	578	94	11	818
HCP	0	11	86	964	123	0	1,204
HW	0	13	245	510	1,480	670	3,117
Total	0	77	413	2,072	1,698	880	5,140
Residual OGR							
Available	3,357	5,339	192	7	0	0	6,895
HCP	120	2,557	250	0	0	0	2,927
HW	0	615	50	0	0	0	665
Total	3,477	8,511	492	7	0	0	12,487

Percent of Total for HCP Status Category in each Density Class

Uncut OGR							
Available	0.0%	6.6%	9.9%	70.7%	11.5%	1.3%	100.0%
HCP	0.0%	0.9%	7.2%	81.7%	10.2%	0.0%	100.0%
HW	0.0%	0.4%	7.9%	16.3%	47.5%	27.9%	100.0%
Residual OGR							
Available	37.7%	60.0%	2.2%	0.1%	0.0%	0.0%	100.0%
HCP	4.1%	87.4%	8.5%	0.0%	0.0%	0.0%	100.0%
HW	0.0%	92.5%	7.5%	0.0%	0.0%	0.0%	100.0%

Available reflects option to cut Owl Crk
HCP is area conserved under proposed permit
HW is Headwaters purchase

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Pacific Lumber HCP

1. C Old Growth Forest Types and HCP Status in-and-outside of Critical Habitat

	Other	OG Doug Fir	REDOG W1	REDOG w 2	REDOG w 3	All Uncut OGR	REDRSD 2	REDRSD 3	All Residual	All OGR	Total Area
Area (acres) of Each Forest Type In- or Not in- Critical Habitat											
In Critical Habitat											
Available, option Grizzley	21,837	31	96	9	14	119	81	1,688	1,769	1,888	23,756
Available, option Owl Crk.	22,178	50	336	84	14	434	91	1,917	2,008	2,442	24,670
TOTAL	27,439	254	3,520	756	346	4,621	295	4,364	4,658	9,280	36,973
NOT In Critical Habitat											
Available, option Grizzley	159,069	8,307	179	253	67	500	231	7,180	7,411	7,911	175,286
Available, option Owl Crk.	158,667	8,307	108	211	67	385	183	6,698	6,881	7,266	174,240
TOTAL	165,672	8,307	186	265	67	518	270	7,558	7,829	8,347	182,326
All HCP Planning Area, Including Headwaters											
Available, option Grizzley	180,905	8,338	276	262	81	819	312	8,868	9,180	9,799	199,041
Available, option Owl Crk.	180,845	8,356	442	295	81	818	274	8,616	8,890	9,708	198,909
TOTAL	193,111	8,561	3,706	1,021	413	5,140	565	11,922	12,487	17,627	219,298
% of All of Each Forest Type in Available Area which Is also in Critical Habitat											
Available, option Grizzley	11.3%	0.4%	2.6%	0.9%	3.4%	2.3%	14.3%	14.2%	14.2%	10.7%	10.8%
Available, option Owl Crk.	11.5%	0.6%	9.1%	8.2%	3.4%	8.4%	16.1%	16.1%	16.1%	13.9%	11.2%
% of All of Each Forest Type within Critical Habitat which Is in Available Area											
Available, option Grizzley	79.6%	12.2%	2.7%	1.2%	4.0%	2.6%	27.5%	38.7%	38.0%	20.3%	64.3%
Available, option Owl Crk.	80.8%	19.6%	9.5%	11.1%	4.0%	9.4%	30.9%	43.9%	43.1%	26.3%	66.7%
% of All of Each Forest Type in Entire Study Area which is In Available Area											
Available, option Grizzley	93.7%	97.4%	7.4%	25.6%	19.7%	12.0%	55.3%	74.4%	73.5%	55.6%	90.8%
Available, option Owl Crk.	93.6%	97.6%	11.9%	28.9%	19.7%	15.9%	48.5%	72.3%	71.2%	55.1%	90.7%

Available, option Grizzley Available for harvest, with option to cut Grizzley Crk unit, not subtracting watercourse protection requirements.
Available, option Owl Crk. Available for harvest, with option to cut Owl Crk unit, not subtracting watercourse protection requirements.

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Pacific Lumber HCP

5. G All Old Growth Redwood Area, and Lower and Higher Occupancy Weighted Estimates of Take In Context
Effective Occupied Habitat (acres, rounded) and Harvest as **%-of** Context

		Occupancy Weighted Estimate					
		Ail OGR		Lower Estimate		Higher Estimate	
		Acres	Harvest %	Acres	Harvest %	Acres	Harvest %
	Subject to Harvest	**9,400**		3,200		4,600	
Context							
	PL Not HW	13,800	68.1%	5,500	58.2%	8,600	53.5%
	Ail PL	17,600	53.4%	8,600	36.4%	12,400	37.1%
	Southern Humboldt	41,200	22.8%	17,900	17.9%	21,600	21.3%
	California	**90,500**	10.4%	67,200	4.8%	70,900	6.5%
	MMCZ 4	147,800	6.4%	124,500	2.6%	128,200	3.6%
	Three State	700,000	1.3%	700,000	0.5%	700,000	0.7%

Subject to Harvest — Assumes Option Cut Owl Crk; Does not subtract areas within watercourse protection zones.
All OGR — Lumps Uncut and Residual OGR forest types (Case 6)
Lower Estimate — Reflects 35% habitat quality weighting for Residual OGR (Case 5)
Higher Estimate — Ail PL Uncut is 100% occupied; State Park Uncut not w/in ½ ml of occ survey is 25% (Case 3)
Area of MMCZ4 includes 44,727 acres from Coos Bay BLM District.
Area for Calif. and MMCZ4 adjusted to account for different contribution from Southern Humboldt

Pacific Lumber HCP

5. H Population-based Estimates of Take, In Context

Estimated Population in Birds and Effect of Harvest as % of Context

Overall Population Range:	LOW				**HIGH**			
	Lower Estimate of Take		Higher Estimate of Take		Lower Estimate of Take.		Higher Estimate of Take	
	Population	Harvest %	Population	Harvest %	Population	Harvest %	Population	Harvest %
Subject to Harvest	251		340		251		340	
Context								
PL Not HW	na							
All PL	na							
Southern Humboldt	**1,479**	17.0%	**1,479**	23.0%	**1,479**	**17.0%**	**1,479**	23.0%
California	4,884	5.1%	4,884	7.0%	4,884	5.1%	4,884	7.0%
M M C Z 4	5,560	4.5%	5,560	6.1%	8,134	3.1%	8,134	4.2%
Three State	16,984	1.5%	16,984	2.0%	30,000	0.8%	30,000	1.1%

Subject to Harvest — Assumes Option Cut Owl Crk; Does not subtract areas within watercourse protection zones,
Lower Estimate — Assumed to be 17% of Southern Humboldt population, based on lower occupied habitat area.
Higher Estimate — Assumed to be 23% of Southern Humboldt population, based on higher occupied habitat area.

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